



## VERIFICATION OF A TRANSLATION

I, Henry M. Feiereisen, having a place of business at 350 Fifth Avenue, Suite 4714, New York, N.Y. 10118, depose and state that:

1. I am familiar with the English and German languages.
2. I have read the attached German language Application No.: 103 17 135.5.
3. The hereto attached English language text is an accurate translation thereof.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: August 24, 2005

  
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# FEDERAL REPUBLIC OF GERMANY

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Title Transport System, in particular an  
Airport Baggage Handling System, and an Article Container

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The attached pieces are a true and accurate copy of the original documents of this patent application.

Office

Munich, 26 February 2004  
German Patent and Trademark

The Commissioner  
On behalf of

## Description

Transport System, in particular an Airport Baggage Handling System, and an Article Container

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The invention relates to a transport system, in particular to an airport baggage handling system, according to the preamble of claim 1, and to an article container for transport systems according to the preamble of claim 8.

10 Transport systems for baggage handling in airports are known, using optical sensors, in particular light barriers, for control purposes. The latter detect the containers, in which the bags are transported, as they pass by on the transport tracks. For safety reasons, all or some of the bags are subjected to X-ray screening.

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Rough handling and wear of conveyor belts of the transport paths and of the container bags propelled by the conveyor belts can cause contamination. Hereby rubbed-off particles and dirt deposit also on the optical sensors, thereby repeatedly impairing the screening operation. Thus, the sensors are frequently  
20 cleansed to ensure a reliable operation of the transport system.

It is an object of the invention to provide a transport system which requires less maintenance and a suitable article container while allowing complete screening of baggage items placed in the containers.

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The object is attained in connection with the transport system by the features set forth in claim 1, and in connection with the article container by the features set forth in claim 8. Advantageous developments are set forth in the sub-claims.

30 In relation to the transport system, the solution provides for a sensor assembly

which includes inductive sensors which detect the article containers while the articles placed in the article containers can be subjected together with the latter to a complete screening operation. The inexpensive inductive sensors are insensitive to dirt and thus require little maintenance. Furthermore, the containers are so constructed with respect to shape, material and structure as to allow complete scanning of articles. The articles can be reliably scanned, without interference from the article containers to allow a check of the articles during their transport in the article containers. In other words, the need for a time-consuming unloading and reloading of articles and in-between screening operation is eliminated.

In order for the sensors to reliably detect the article containers, each container has dopants which are so arranged as to pass respectively the response range of the sensors. Each article container can thus be detected by the transport system.

When the dopants have an effective atomic number smaller than 6.5, the transported articles can be reliably screened. When the dopants include lithium, beryllium, carbon, or boron, or a mixture of these elements, the articles transported by the article container can be scanned completely by the screening device.

A reliable response of the inductive sensors of the transport system is realized when each article container has metal elements based on which the sensors are able to detect the article containers, wherein the metal elements are disposed on the article container in such a way as to pass the sensors in their response range.

When configuring the metal elements as bands arranged on an underside of the article container in a region of its outer edge, the articles transported by the article container can completely be screened. A possible formation of a "visible shadow" by the bands during the screening operation is then located outside the transport item or article being checked.

The presence of a "visible shadow" by the bands during screening rays can also be avoided when the article container for receiving the article has a trough-shaped configuration and when the lowest point of the article, as viewed in a vertical direction, is located above the metal elements in transport position.

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In relation to the article container, the solution provides dopants on the article container for allowing the sensors to detect the article container, wherein the dopants are so disposed on the article container as to pass the sensors in their response range, and wherein the articles in the article container can be completely scanned.

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The invention will now be described with reference to a drawing.

The sole Figure shows hereby a perspective illustration of a trough-shaped article container 1 for a transport system (not shown) configured as an airport baggage handling system. The article container 1 is positioned in the Figure on the trough opening which therefore is not depicted in the Figure. The Figure shows the article container 1 with a view towards its bottom 2, i.e. to its container bottom 3.

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As shown in the Figure, the containers 1 have on the container bottom two side surfaces 5a which extend in transport direction and which represent the two sides of a groove-shaped recess 5 in transport direction. The side surfaces 5a extend in mirror-symmetrical relationship and are outwardly (or inwardly) curved in such a manner that a greatest (or smallest) distance of the side surfaces 5a is defined in mid-section of the side surfaces. Drive and guide means can engage in the groove-shaped recess 5, while respectively bearing upon, at least partially, on both side surfaces 5a. The side surfaces 5a are curved as mirror images by a radius corresponding to the radius of the curves of the curve conveyor of the transport system and disposed in inclined relationship as mirror images in such a manner that the groove-shaped recess 5 widens downwardly. They may also

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extend vertically in relation to the bottom surface of the container bottom 3 of the container.

5 The article container 1 is transported in the transport system in transport direction F.

10 The transport system is comprised of single transport tracks for conveying the article containers 1 by means of the drive and guide means. Each conveyor track is hereby outfitted with a sensor assembly having an inductive sensor placed at the leading end and an inductive sensor placed on the trailing end of each conveyor track. These sensors detect an arrival and departure of an article container 1 on the respective conveyor section to produce corresponding signals which also serve to control of operation of the conveyor section immediately following in transport direction F.

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The container 1 has outer sides 6 which extend in substantial parallel relationship to the transport direction F and are provided with dopants 4 to define doped zones. The doped zones extend continuously along the entire length of the outer sides 6 so that the sensors are able to detect the article container 1 along the entire length thereof, as the container 1 passes by.

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The doped zones 4 shown in the Figure are characterized by their electric permeability which significantly differs from the permeability of air so as to assure a safe response by the inductive sensors when the doped zones 4 are positioned in the response range of the sensors.

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Suitable dopants 4 include lithium, beryllium, carbon or boron, or a mixture of these elements. The dopants are arranged on the outer sides 6 of the article container 1 and ensure a slight switching distance to the inductive sensors as it passes by. When using lithium or beryllium as dopants, care should be taken to

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suitably protect them against air, water and other external influences. Typically, appropriate areas of the article container are enriched with dopants 4. The use of carbon as dopant involves an electrically conductive form such as graphite or carbon fibers.

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The afore-mentioned chemical elements for use as dopants do not interfere with the screening process of articles placed onto the article container 1 because as a consequence of their fairly low atomic number, they can easily be scanned.

10 As an alternative, the doped zones may also be realized by metal elements 4 in the form of a steel band. In order to assure a reliable response by the sensors, the steel band has a width of 3 cm and a thickness of 1 mm. In this way, the conductivity in the response range of the sensors is sufficiently changed so that the sensors are assured to detect the article container 1.

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Screening of the article is hereby possible without interference as the steel bands are arranged on the bottom 2 in the area of the outer sides 6 of the article container 1, i.e. at the underside to the outer edge below the container sidewall. Hereby, the lowest point of the transport item in the concavely shaped trough is still located above the highest point of the steel band, as viewed in vertical direction, when the article container 1 is transported.

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When the article container travels through a tomograph in which the axis X-ray sender – X-ray detector revolves, the X-ray radiation is not impaired by the presence of the steel band as the visible shadow of the X-ray is always situated outside of the article.

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## CLAIMS

What is claimed is:

1. Transport system, in particular an airport baggage handling system,  
5 comprising:  
a transport track for article containers (1) to be transported;  
a sensor assembly for controlling the transport of the article containers (1) along a  
transport path; and  
a screening device, provided on the transport track, for scanning the articles,  
10 characterized in  
that the sensor assembly includes inductive sensors which detect the article  
containers (1) and that the articles placed in the article containers (1) can be  
completely scanned therewith.
- 15 2. Transport system according to claim 1,  
characterized in  
that each article container (1) includes dopants (4) for detection, and the dopants  
(4) are so disposed on the article container (1) as to pass sensors in their  
response range.  
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3. Transport system according to claim 1 or 2,  
characterized in  
that the dopants have an effective atomic number smaller than 6.5.
- 25 4. Transport system according to one of the claims 1 to 3,  
characterized in  
that the dopants include lithium (Li), beryllium (Be), carbon (C), boron (B) or a  
mixture of these elements.
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5. Transport system according to claim 1,  
characterized in  
that each article container (1) includes metal elements (4) so disposed on the  
article container (1) as to pass the sensors in their response range.

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6. Transport system according to claim 5,  
characterized in  
that the metal elements (4) configured in the form of bands are arranged on the an  
underside of the article containers (1) in a region of the outer sides (6).

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7. Transport system according to claim 5 or 6,  
characterized in  
that the article containers (1) have a trough-shaped configuration such that a  
lowest point of the article, as viewed in a vertical direction, is located above the  
metal elements (4).

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8. Article container (1) for a transport system, in particular an airport baggage  
handling system, which includes a transport track for the article containers (1) to  
be transported, a sensor assembly for controlling the transport of the article  
containers (1) along a transport path, and a screening device, provided on the  
transport track, for scanning the articles,

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characterized in

that the article containers (1) have dopants or metal elements (4) based on which  
inductive sensors are able to detect the article container (1),

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wherein the dopants or metal elements are arranged on the article container in  
such a way that the article containers (1) pass the sensors in their response range,  
and

the articles located in the article containers (1) can be complete scanned  
therewith.

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9. Article container according to claim 8,  
characterized in

that the containers (1) have a container underside (2) formed with two side  
surfaces (5a) extending in transport direction and bounding a grooved recess (5)  
5 extending in the transport direction F, wherein the side surfaces (5a) are outwardly  
or inwardly curved mirror-symmetrically to define a greatest or smallest distance of  
the side surfaces (5a) in mid-section of the longitudinal sides, and that drive and  
guide means engage the grooved recess (5) and can bear respectively, at least  
partially, upon the side surfaces (5a).

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10. Article container according to claim 9,  
characterized in

that the side surfaces (5a) are curved outwardly mirror-symmetrically at a radius  
which corresponds to a curve radius of a curved conveyor.

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11. Article container according to one of the claims 9 or 10,  
characterized in

that the side surfaces (5a) of the grooved recess (5) extend perpendicular to the  
bottom surface of the container (1).

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12. Article container according to one of the claims 9 or 10,  
characterized in

that the side surfaces (5a) of the grooved recess (5) are positioned as mirror  
images in inclined relationship to form a configuration of the recess (5) in  
25 downwardly expanding direction.

## ABSTRACT

Transport System, in particular an Airport Baggage Handling System, and an Article Container

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The invention to a transport system, in particular an airport baggage handling system, with a transport track for article containers (1) to be transported; with a sensor assembly for controlling the transport of the article containers (1) along a transport path, and with a screening device, provided on the transport track, for scanning the articles. In order to provide a transport system of low maintenance while taking into account a hundred percent inspection of the transported baggage items by scanning, it is proposed that the sensor assembly includes inductive sensors which detect the article containers (1) and that the articles placed in the article containers (1) can be completely scanned therewith.

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Fig. 1 herefore